

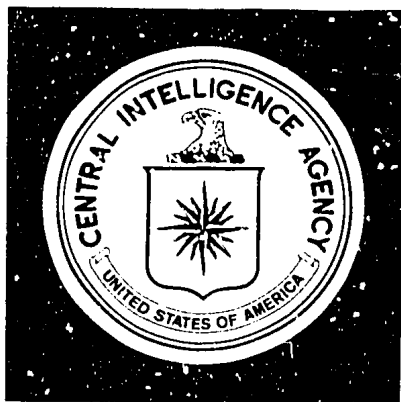
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Weekly Surveyor

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TSWS-31/75

4 August 1975

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WEEKLY SURVEYOR

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USSR AND EASTERN EUROPE

terials. [REDACTED]

The Soviets have reduced the scope of upcoming US-USSR POLYMODE experiment. This is further indication of Soviet foot dragging and inability to make a significant contribution to the large scale joint experiment scheduled to be conducted in the western Atlantic in 1977. [REDACTED]

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The Soviet Far East is still far from achieving the levels of research accomplished at such established centers for hydroacoustic research in the western part of the country, but hydroacoustic research in the Far East facilities is expanding and improving. This may help to satisfy some of the Soviet Navy sonar needs for the Pacific area. [REDACTED]

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Present Soviet nuclear power plant pollution controls appear to be limited to containing airborne radiation emissions and lack effective thermal and low-level radioactively contaminated water pollution controls. As more plants are constructed, thermal pollution will become a major problem. [REDACTED]

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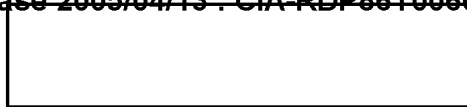
The Soviet BN-350 fast breeder reactor experienced another steam generator failure. The failure occurred in a recently repaired steam generator. This is the fourth steam generator failure for the BN-350. The cause of this failure has been attributed to the use of defective ma-

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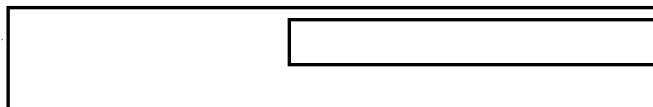
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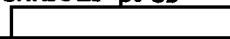


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The seventh and latest Japanese nuclear reactor shutdown was caused by poor quality control by the Japanese supplier

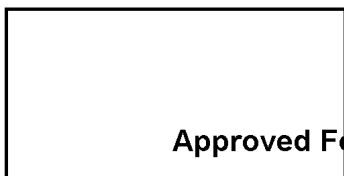
and manufacturer of steam generators, Mitsubishi Heavy Industries. Overall, Japan's nuclear power program has not been hindered significantly by technical problems of domestic origin.



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NUCLEAR ENERGY

Soviet Fast Breeder Reactor at Shevchenko Experiences Another Steam Generator Failure: In February, one of the recently repaired steam generators on the BN-350 liquid-metal fast breeder reactor (LMFBR) located at Shevchenko experienced a massive failure. After only 7 days of operation about 700 liters of water entered the sodium side of the steam generator. Temperatures reached 800-900°C because of the sodium-water reaction. High temperature caustic corrosion damaged 120 tubes. The cause of this steam generator failure was believed to be defective tube material since the end caps and welds had undergone extensive nondestructive testing. [REDACTED]

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Comment: Lack of adequate quality control has plagued Soviet development of a reliable steam generator for LMFBRs. This is the fourth steam generator failure for the BN-350, and it could delay the full-power operation of the reactor by as much as a year. The causes of the first three failures were attributed to poor welding and inadequate inspection procedures. Since the fourth failure has been attributed to defective tube material, it is not known whether the Soviets will continue with their program to retube the steam generators with the existing supply of field tubes or whether new tubes will be ordered. [REDACTED]

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Poor Quality Control Causes Shutdown of Japanese Nuclear Power Plant: A steel measuring tape, extended 11.5 feet and folded midway, was found to have been inadvertently left in a steam generator in Kyushu Electric Power Company's Genkai-1 nuclear power plant. Power company officials judged that flowing water caused the tape to rub against the tube surface, creating a thin spot which allowed radiation to leak into the secondary coolant. Mitsubishi Heavy Industries (MHI) is suspected as being responsible, either in their role as manufacturer or installer of the steam generator. [REDACTED]

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Comment: With this shutdown, seven of the 12 reactors in Japan were out of action in late June for correc-

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[REDACTED]

tive repairs or for safety inspections prompted by flaws detected in similar US reactors. Five of the reactors that were shutdown were in commercial operation; the others were still undergoing trial runs.

The shutdown of the Genkai-1 power plant was a result of poor quality control by MHI, and the Kansai Electric Power Company's Takahama-2 plant was shutdown because of a nontechnical problem--jellyfish attracted by warm coolant water clogged the discharge gates. Overall, Japan's nuclear power program has not been hindered significantly by technical problems of domestic origin.

[REDACTED]

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LIFE SCIENCES

Soviet Nuclear Power Plant Pollution Controls Lacking in Some Respects: The Soviet Health and Sanitary Inspection Bureau has reported success in its enforcement of strict radiation controls, and as a result, there is "little radioactive pollution in the USSR." Radiation test results at several nuclear power plants have shown radiation levels to be 1/10 to 1/100 of the maximum permissible concentration.

Contaminated air is passed through a "special decontamination device" and released through a stack, while aerosols are passed through a PVC filter. The "cleaning process" employs an activated carbon filter. Both filters claim a 99.9% efficiency. Rare gases are passed through a gas trap where their radioactivity is attenuated and contaminants removed.

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Comment: Presently the controls seem to be limited to containing airborne radiation emissions rather than enforcing thermal controls. Although the Soviets may have contained major quantities of airborne radioactive pollution from nuclear power plants, they still lack effective thermal and low-level radioactively contaminated water pollution controls.

Water from nuclear power plant laundries and laboratories is not reused and is discharged directly into sewage systems or rivers. Although radiation levels are well below 10^{-5} ci/l (curies per liter), radioactive isotopes with long half-lives may build up in lakes and rivers producing undesirable results.

Large quantities of heat, if discharged locally by nuclear power plants, can influence physical environments, increase fog, and affect microclimates of streams and rivers, particularly in central European latitudes. As more plants are constructed, thermal pollution will become a major problem particularly in eastern sections of the USSR where pollution abatement would have low priority because of the sparse population and industry.

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PHYSICAL SCIENCES AND TECHNOLOGIES

Soviet Foot Dragging and Technical Inabilities Hamper the US-USSR POLYMODE Oceanographic Experiment: The POLYMODE intercalibration exercise of US and USSR buoy moorings and CTD (conductivity, temperature, and depth) instrumentation, scheduled for July 1975, will be reduced in scope. While the exercise is still scheduled, the launch and retrieval of buoy moorings will be postponed to late 1975 or early 1976. The postponement is reportedly due to confusion created by the Soviet bureaucracy. Success in the remaining part of this month's exercise is also subject to doubt. [REDACTED]

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Comment: This is further indication of Soviet foot dragging and inability to make a significant contribution to the evolution of a very large scale joint oceanographic experiment scheduled to be conducted in the western Atlantic in 1977 (POLYMODE). Moreover, the Soviet bureaucracy not only has been partly responsible for earlier delays in the program, but Soviet technical capabilities also have caused problems.

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Hydroacoustic Research in the Soviet Far East is Expanding: The First Far Eastern Acoustics Conference was held in Vladivostok during the fall of 1974. It included participants from the Far Eastern Polytechnic Institute, Far Eastern Scientific Center, Sakhalin Complex Scientific Research Institute (SAKhKNII), and numerous other Far Eastern scientific organizations. The conference emphasized sound propagation in the sea and the prospects for expanding the role of the Far East in Soviet hydroacoustic research. [REDACTED]

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Comment: While still far from achieving the levels of research accomplished at such established centers for hydroacoustic research as Moscow, Leningrad, and Kiev, the Soviet Far East hydroacoustic research is expanding and is expected to improve. This expansion is undoubtedly associated with Soviet naval needs for the Pacific area.

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